

Chemicals Company
Delaware Valley Works
Marcus Hook, Pennsylvania 19061
Phone: Chester, Pa (215) 485-1657

R. Sobel
A. L. Schwartz
L. A. Mattioli
J. B. Oliver

August 15, 1980

Mr. Kenneth R. Weiss, Resource Engineer
Solid Waste Management Branch
Division of Environmental Control-DNREC
Tatnall Building
Dover, DE 19901

Dear Mr. Weiss:

At a meeting on June 24 with our Regional Environmental Supervisor, David T. Murphy, you discussed the presence of "red mud" (residual iron oxide from pyrites ore burning) contained within our gypsum impoundment area. As a result of the meeting we were requested to submit our assessment of the situation and a proposal which satisfactorily protected the area from contaminated run-off.

Although you already have much of this information which was discussed during your previous meeting it is important to highlight again. The sketch showing locations of the core samples together with the boring logs indicate the presence of "red muds" (Exhibit No. 1). Specific reference is to Boring No. 2 on the sketch and Boring No. TB-2 of Walton's Boring Log, samples 4 and 5 (Page-5).

The analytical data shows that although the total concentration of various metal impurities are relatively high the leachate analyses are very low (Exhibit No. 2). Specific reference is to Lancaster Laboratories' Table I where Boring No. 2, samples 4 and 5 have been made into LLI's Composite Sample No. G-2307 (Page-3). Specific references are to Lancaster Laboratories' Tables II and III analytical results on Sample No. G-2307 (Pages 4 and 5). Further corroboration is shown by analytical data on in-plant leachate tests run at pH's of 4, 7 and 10 (Exhibit No. 3). An in-plant report on results from leachate tests performed on the filter cake residue from the South Plant Waste Treatment system are also included since this is the only material currently being retained on site (Exhibit No. 4).

The "red Mud" is iron oxide formed when pyrites ore (iron sulfide) was burned at 1800° - 2000° F. Observations through a microscope have shown the particles to be glassy in appearance, fused with no apparent porosity. This could explain the low levels of metals in leachate extractions. Based on the location of the "red mud" in respect to the volume of gypsum we feel that in addition

August 15, 1980

to the "red muds'" insolubility its encapsulation in the gypsum renders it inaccessible. As indicated in the boring log, Exhibit No. 1: Page-5, Samples No. 2, No. 3 and No. 3A, layers of some gypsum were so hard a diamond core had to be used.

Using 3 metals as indicators, (copper, lead, zinc), analyses of our Main Outfall (001) and intake water from the Delaware River (samples taken concurrently) show no evidence of contamination from the containment area. The values obtained are within NPDES permit limits. The gypsum containment is bounded on one side by our Main Outfall (001) and on another side by Middle Creek both of which flow into the Delaware River which forms the boundary on a third side. Monthly analyses for the last 5 years are attached (Exhibit No. 5).

Summary

Based on the accumulated information we feel the "red mud" should remain in place. Even though the containment area lies within the 100 year flood plain boundary the insolubility of the fused material would render it as harmless as normal soil erosion products. The fact that leachate tests show the material passes non-hazardous waste criteria eliminates the need for monitoring wells. Our proposal is to expend our efforts in contouring the site and providing vegetation for erosion prevention. The program for achieving this is attached.

If further information is needed contact Mr. J. B. Oliver, Environmental Supervisor; telephone 798-0621, Extension 319.

Very truly yours,

P. L. Brueckner

P. L. Brueckner
Plant Manager
Delaware Valley Works

PLB/lid
Attachments

cc: Mr. Robert L. Allen
Chief, Hazardous Materials Branch
USEPA, Region III 3AH30
6th and Walnut Streets
Philadelphia, Pa. 19106

Mr. Wayne Naylor
Environmental Scientist
Hazardous Materials Branch
USEPA, Region III 3AH30
6th and Walnut Streets
Philadelphia, Pa. 19106

Reclamation Proposal

Background and General Discussion

The proposed area to be reclaimed is located on property owned by Allied Chemical Corporation as a portion of the Delaware Valley Works-South Plant. The site is bounded on the south by the Delaware River, on the east by Middle Creek, on the West by the Delaware Valley Works' main Outfall (001, NPDES Permit #0000655. The north side of the site borders the area of the former hydro-fluoric acid plant.

The object of the reclamation and revegetation project is to further seal the site from potential rain water percolation and to establish a vegetation cover to minimize erosion and fugitive dust.

The site consists of five (f) distinct sections each requiring separate methods of site preparation to insure adequate slope preparation. These sections have been given the following designations:

- 1 Top: Any area with a slope of less than 1 on 3
- 2 North Slope: The area on the opposite side of the river
- 3 East Slope: The area fronting on Middle Creek
- 4 West Slope: The area fronting on the plant discharge stream
- 5 South Slope: The area fronting the Delaware River

Each of these sections will be discussed separately including the proposed plan of action to achieve a successful reclamation.

Reclamation Proposal

The material to be used will consist primarily of the non-hazardous filter cake generated at the location's South Plant Waste Treatment System. The leachate analysis of this material is presented in Exhibit No. 4. This material will be moved to the site and used to establish the final site slopes. Based on a test plant and the fugitive growth which has established itself the material appears able to support and propogate vegetation.

Reclamation

Each section will be developed in a systematic order with the higher priority slopes reclaimed first to minimize future erosion and dusting problems and to improve the aesthetic value of the site

West Slope

This area parallels the plant discharge and is the area with the most critical slope ratio. The proposed slope to be established in this area will be no more than one on one with every effort made to obtain a one on three slope. The problem is the lack of room to establish a leasser than one on one slope because of the height of the site and the close proximity of the plant effluent stream. Once a portion of the slope is established it will be stabilized with jute, cotton or paper netting and then mulched and seeded according to the revegetation plan. A twelve foot wide road way will be maintained between the toe of the slope and the stream.

Reclamation Proposal

South Slope

The base of the present slope will be the toe of the new slope which will rise on a one on three grade to the top of the site. There should not be any need to artificially stabilize the slope in this area. A twelve foot wide roadway will be maintained between the toe of the slope and the graded approach to the river front rip rap bulk head.

North Slope

The slope in this section is greater than one on three but the location has been successful in establishing vegetation. The plan is to finish grading as quickly as possible and to begin re-vegetation. Artificial stabilization will be utilized only in segments appearing to present erosion problems.

Top

The entire top of the site will be graded to slopes of not more than one on ten nor less than one on twenty with the high points along the south and east slopes. This will cause excessive rainwater run-off to be diverted from direct drainage to the plant effluent stream and the river.

East Slope

This is the final section to be reclaimed since it will require the most fill to obtain the desired one on three slope. It will be in this area where a twelve foot wide service road will be maintained to provide access for maintenance to the top of the site. The final slope will be one on three using the edge of the top for a reference point.

Reclamation Proposal

Revegetation

The initial and major effort for the revegetation is to establish a perennial, maintenance free, natural cover using plants with nitrogen fixing properties. To accomplish this all sections will be hydroseeded at the following rate:

Creeping Red Fescue - Commercial Seed - 6 pounds per acre

Crown Vetch - Commercial Seed - 30 pounds per acre

Rye Grass - Commercial Seed - 100 pounds per acre

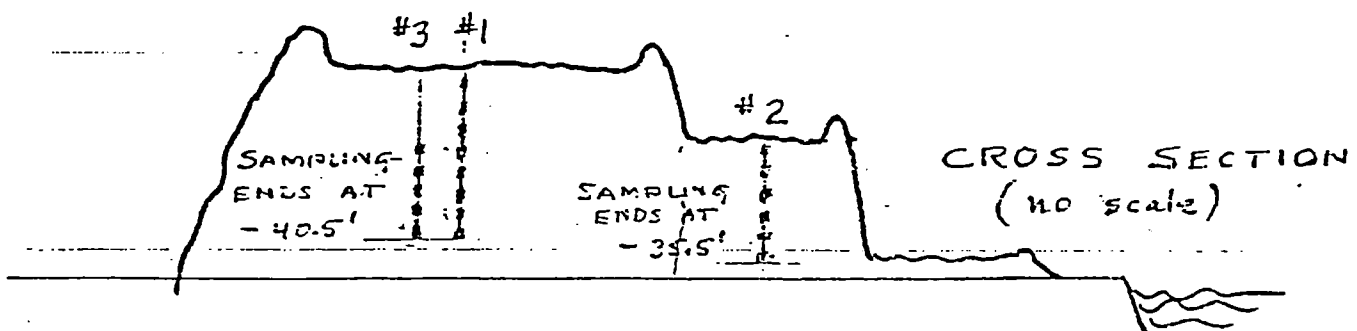
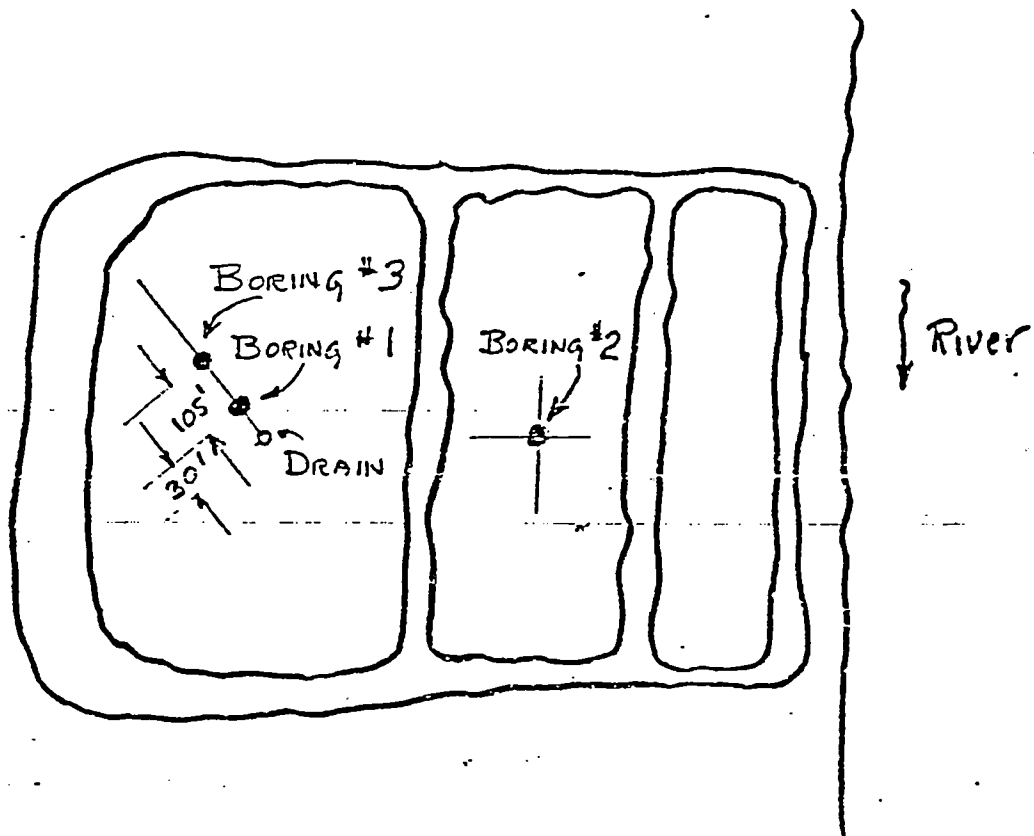
Fertilizer - 12-24-12 - 600 pounds per acre

Mulching - Hay or Straw - 2 tons per acre

The seeding dates will be in the spring (April-May) and fall (September-October).

The West Slope and North Slope sections will have a soil sealer-stabilizer applied at the rate of 45 gallons per acre.

Modifications will be made to the seeding mixture if unexpected difficulties are encountered.



CORE SAMPLING of SOLID WASTE "MOUNTAIN" DELAWARE WORKS.

- DRILLING BY WALTON CORP
 - ANALYSES BY LANCASTER LABORATORIES
- REPORT DATED DEC 3 1974.

BLOWS ON CASING B	
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*"The Reliable Hands of Lancaster"*

December 3, 1974

Mr. K. F. Borden, Project Manager
Box 2105 R
Corporate Engineering Dept.
Allied Chemical Corp.
Morristown, NJ 07960

Dear Mr. Borden:

Enclosed with this letter report are three tables compiling all of the trace metal analytical results performed in duplicate for the 10 composite samples of industrial by-product waste as stipulated in your purchase order #773108615. In order to discuss these results in a meaningful manner it is necessary to provide background information on these samples regarding the drilling location, the sample compositing methods, and the problems encountered in total digestion procedures.

A total of 32 samples were sent to us. These represented samples taken approximately every 5 feet in depth for a complete drilling at level 2, two drillings at level 3, and two additional incomplete drillings at level 3. Reference is made to our original proposal for the numbers designating the three levels of the waste pile. Since analyses on 10 composite samples were requested, 20 drilling samples were selected for drying and grinding. Table I summarizes the composited samples, listing both the levels from which they were taken, the depth at which they were taken, and Lancaster Laboratories sample numbers for the composites of every two five foot drillings. After these drilling samples were composited, 100 g quantitatives were taken in duplicate for analysis of all the metals, and the duplicate samples are distinguished by an (a) and (b) following our sample numbers (see Table II).

As indicated in past correspondence our digestion procedure for determining total concentrations of each of the elements consisted of an aqua regia digestion. For all past samples of the HF by-product residue this digestion procedure proved adequate for 100% dissolution; however, in this series of samples only 2 were completely solubilized by treatment with hydrochloric and nitric acids. These were G-2303 and G-2309. Sample G-2310 was almost completely solubilized. We did not attempt to get complete solubilization by other digestion methods such as strong alkali fusion for a number of reasons; a. alkali fusion would not be applicable for all the elements and certainly losses of some would be incurred; b. the aqua regia digestion procedure has worked well for the HF residue in the past and to change at this point would not allow valid comparisons to be made with our past results; c. if concentrated HCl and concentrated HNO₃ in combination cannot render such a sample soluble, it is difficult to conceive how such a material could cause harm to the environment through natural leaching processes. Thus all of the samples were treated with aqua regia as in the past, and any insoluble residue was filtered prior to analysis.



TABLE II

Elemental Composition of Drilling Samples*

Level	Depth	LLI Sample No.	Cu	Cr	Pb	Cd	Be	Zn	Ni	Hg	As	
3	14.0 - 20.5	G-2303A	7.5	9.4	85.6	<0.31	<0.31	26.2	<3.1	3.0	0.20	1
		G-2303B	9.4	10.0	89.3	<0.31	<0.31	26.3	<3.1	3.4	0.26	1
3	34.0 - 40.5	G-2304A	93.7	22.5	465	2.5	<0.31	183	<3.1	0.34	63	2
		G-2304B	101	20.0	428	2.5	<0.31	200	<3.1	<0.31	67	2
2	4.0 - 10.5	G-2305A	10.6	12.5	16.2	<0.31	<0.31	22.5	<3.1	0.34	2.0	1
		G-2305B	11.9	10.6	15.6	<0.31	<0.31	22.5	<3.1	<0.31	1.9	1
2	14.0 - 20.5	G-2306A	102	12.5	212	1.6	<0.31	236	<3.1	<0.31	45	2
		G-2306B	112	10.6	191	1.9	<0.31	251	<3.1	<0.31	40	2
2	24.0 - 30.5	G-2307A	363	56.1	5550	10.9	<0.31	1880	13.7	93	410	6
		G-2307B	429	51.6	5810	9.5	<0.31	1830	15.5	99	540	2
2	34.0 - 35.5	G-2308	17.4	37.3	71.6	<0.31	<0.31	112	16.8	1.1	63	2
		G-2308	17.4	34.7	77.9	<0.31	<0.31	101	20.5	0.93	53	3
3	4.0 - 10.5	G-2309A	8.1	10.6	19.3	1.2	<0.31	62.4	<3.1	14	4.5	3
		G-2309B	8.1	10.0	16.2	1.1	<0.31	56.1	<3.1	15	4.4	3
3	14.0 - 20.5	G-2310A	6.9	10.6	73.7	<0.31	<0.31	25.0	<3.1	6.9	1.0	2
		G-2310B	8.1	10.0	77.9	<0.31	<0.31	23.1	<3.1	5.3	0.8	1
3	24.0 - 30.5	G-2311A	8.1	18.7	62.5	<0.31	<0.31	13.7	<3.1	2.2	0.20	2
		G-2311b	9.4	19.3	64.9	<0.31	<0.31	15.0	<3.1	2.1	0.17	3
3	34.0 - 40.5	G-2312A	103	26.1	1270	1.9	<0.31	106	<3.1	0.31	27	4
		G-2312B	122	18	1420	2.2	<0.31	101	<3.1	0.31	27	5

*All results expressed in ppm

TABLE III

	<u>Lead</u>	<u>Zinc</u>	<u>Cadmium</u>	<u>Chromium</u>	<u>Copper</u>
G-2304*	1.3	28	0.60	0.50	0.50
G-2307*	4.8	121	<0.025	0.40	0.20
G-2312*	2.0	13	0.50	0.50	0.75
G-2307 (24.0 - 25.5 ft.)	8480	3120	13.7	49.9	374
G-2307 (29.0 - 30.0 ft.)	5020	1040	5.0	78.3	547

*water extract. 30g sample was shaken with 300 ml DD-H₂O for 72 hrs. The sample was filtered thru Whatman #41 filter paper and then thru 0.45 micron filter paper. Then 100 ml was acidified and concentrated to 50 ml.

COMPANY CORRESPONDENCE

TO DIV: I. C. D. FROM DIV: Corporate Engineering
 LOCATION: Delaware Works LOCATION: MTC - SOL 3
 ATT'N OF: J. B. Lukas DATE: December 27, 1974
 SUBJECT: Delaware Works
 Solid Waste "Mountain"
 Job No. 10609

The exploratory core drillings in the solid waste mountain at Delaware Works, and the analysis of the core samples, have been completed. The laboratory work is reported in the letter of Lancaster Laboratories, Inc., dated December 3, 1974, which presents analytical data on the mountain material on the same basis, and directly comparable with, their earlier report on the HF residue which was prepared for Delaware Contracting Company as the base for the usage approval granted by the Delaware Department of Natural Resources.

Since the composition of the mountain differs, and there are zones of high concentrations, it is believed that a review of these December 3 findings and a discussion of their significance and completeness is important before proceeding with plans to offer this material for sale. Lancaster Laboratories' Dr. Hess is available to attend if we so request.

It is the writers suggestion that we schedule such a meeting at Delaware Works at our early opportunity, in which we can evaluate this data and program our next moves; we will be pleased to make the arrangements if you concur.

For your prior information, we enclose a copy of the subject Report and a sketch showing the locations from which the core samples were taken.

K. F. Borden
 Project Manager

KFB:cjt:5/1

enclosure

cc: J. M. Quinn - Morristown Office

K. F. Borden

DELAWARE		
WORKS DEC 30 1974		
DO NOT HOLD		
Circled person to file		
return to Main Office to		
BL EGN RWH KWB BC LGB JH FXM BWC JBP	FJD GEK LFS TCJ SWS EJC EJP SEB RCF JWB EAG	CPS CWM CDF WDS WJA DCB WEP HHT SJF MC

Analytical Data (mg/l)
Main Outfall (001) and Delaware River Water Intake

Month	<u>Copper</u>		<u>Lead</u>		<u>Zinc</u>	
	Outfall	Inlet	Outfall	Inlet	Outfall	Inlet
1978 January	.019	.017	.03	.02	.09	.11
February	.02	.02	.025	.03	.10	.12
March	.05	.02	.07	.02	.19	.11
April	.02	.016	.02	.014	.04	.066
May	.02	.02	.01	.01	.04	.07
June	.02	.01	.02	.01	.05	.04
July	.02	.02	.02	.02	.08	.07
August	.02	.029	.02	.037	.05	.14
September	.04	.01	.04	.01	.15	.05
October	.01	.01	.01	.01	.08	.06
November	.02	.01	.04	.02	.07	.06
December	.02	.01	.03	.02	.09	.07
1979 January	.02	.02	.03	.03	.10	.09
February	.03	.02	.02	.01	.10	.07
March	.04	.01	.04	.01	.12	.05
April	.03	.01	.03	.01	.11	.04
May	.02	.01	.02	.01	.05	.04
June	.03	.01	.03	.02	.09	.07
July	.02	.01	.02	.01	.06	.04
August	.013	.01	.02	.03	.027	.028
September	.04	.02	.05	.01	.045	.12
October	.03	.02	.02	.02	.05	.03
November	.01	.04	.01	.06	.08	.04
December	.01	.02	.02	.01	.04	.04
1980 January	.02	.02	.02	.01	.07	.065
February	.018	.012	.062	.023	.066	.075
March	.023	.033	.063	.059	.012	.12
April	.024	.013	.07	.068	.18	.16
May	.03	.019	.08	.24	.13	.16
June	.018	.012	.034	.03	.045	.053
July	.021	.017	.045	.036	.077	.068
August						
September						
October						
November						
December						

TABLE I

<u>Level</u>	<u>Boring Number</u>	<u>Walton's Sample No.</u>	<u>Depth(ft.)</u>	<u>LLI's Composite Sample No.</u>
2	2	1	4.0 - 5.5	G-2305
	2	2	9.0 - 10.5	
	2	3	14.0 - 14.5	G-2306
	2	3A	14.5 - 15.5	
	2	4	19.0 - 20.5	G-2307
	2	5	24.0 - 25.5	
	2	6	29.0 - 30.5	G-2308
	2	7	34.0 - 35.5	
3	1B	1	4.0 - 5.5	G-2309
	1B	2	9.0 - 10.5	
	1B	3	14.0 - 15.5	G-2310
	1B	4	19.0 - 20.5	
	1B	5	24.0 - 25.5	G-2311
	1B	6	29.0 - 30.5	
	1C	7	34.0 - 35.5	G-2312
	1C	8	39.0 - 40.5	
3	3	3	14.0 - 15.5	G-2303
	3	4	19.0 - 20.5	
	3	7	34.0 - 35.5	G-2304
	3	8	39.0 - 40.5	

Residues in soil - copper test

Treatment made Jan 2/2/77
 Plot 4
 Plot 7
 Plot 10

Cu	0.01 ppm	<0.01	0.20	0.02
Fe	0.6	<0.1	0.04	<0.1
Mn	0.35	0.03	0.02	0.01
Ni	0.05	0.02	0.04	0.02
Zn	0.04	<0.01	0.04	<0.01
Pb	6.50	<0.1	9.8	9.8
Co	<0.01	<0.01	0.01	0.01
Cr	0.05	0.06	0.06	0.06
As	0.15	<0.01	<0.01	<0.01
Ag	0.8 ppm	0.9 ppm	<0.4 ppm	<0.4 ppm
Se	0.4 ppm	8.2 ppm	6.0 ppm	6.0 ppm
S	<0.1	<0.1	<0.1	<0.1
C	<0.1	<0.1	<0.1	<0.1

divided standard as is with - Ar, H₂ (low)

ATTACHMENT C

PESTICIDE CONTAMINATED SITES

Initial findings regarding site contamination are contained in correspondence between Allied Chemical and EPA Region III written in 1976 and 1977. To insure no release of Kepone and/or DDT and its metabolites Allied chemical undertook a large scale paving program in 1978. The paving covers a total of 5.4 acres and is adjacent to eleven buildings. The paving specification encompassed grading excavation, drainage upgrading and surfacing to provide maximum durability. Site excavation material remained on-site and was used for contouring the Northern paved border area.

In light of this corrective measure Allied Chemical accepted as part of its NPDES permit DE 0000655 a "no net increase" parameter on DDT and its metabolites and Kepone dated 6/1/78 and valid through 12/31/82. During this period only 17 of 497 analytical tests (attached) for the contaminants show a numerical value with none exceeding 0.6 ppb. March 1980 through December, 1982 results show no detectable values of the contaminants. The permit was renewed in 1983 and the pesticide monitoring requirement was dropped. No test data is available beyond that time.

OUTFALL #101PESTICIDE RESIDUAL

CONCENTRATION LISTED IS HIGHEST VALUE FOR THE MONTH.

NOTE:

A) ALL VALUES IN PPB

B) LOWER DETECTION LIMIT = 0.2 PPB WITH A STANDARD DEVIATION OF
± 0.5 PPB.

C) N.D. - NOT DETECTED.

<u>Month</u>	<u>Year</u>	<u>Kepone</u>	<u>op DDD</u>	<u>op DDE</u>	<u>op DDT</u>	<u>pp DDD</u>	<u>pp DDE</u>	<u>pp DDT</u>
June	1977	½0.2	½0.2	½0.2	½0.2	½0.2	½0.2	½0.2
July	1977	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1
Aug.	1977	½0.05	0.1	0.4	0.1	½0.02	½0.02	½0.02
Oct.	1977	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1
Nov.	1977	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1
Dec.	1977	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1	½0.1
Jan.	1978	N.D.	½0.1	N.D.	N.D.	½0.1	N.D.	N.D.
Feb.	1978	N.D.	N.D.	N.D.	N.D.	½0.2	N.D.	N.D.
Mar.	1978	N.D.	N.D.	N.D.	N.D.	0.2	N.D.	N.D.
Apr.	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
May	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
June	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
July	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Aug.	1978	N.D.	0.2	0.3	0.4	0.4	N.D.	0.5
			Rep. as small net discharge					
Sept	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Oct.	1978	N.D.	N.D.	0.2	N.D.	0.6	N.D.	N.D.
Nov.	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dec.	1978	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Jan.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Feb.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Mar.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Apr.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
May	1979	N.D.	N.D.	N.D.	N.D.	0.3	N.D.	N.D.
June	1979	N.D.	N.D.	N.D.	N.D.	0.3	N.D.	N.D.
July	1979	NO SAMPLES						
Aug.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Sept	1979	N.D.	N.D.	N.D.	0.5	0.4	N.D.	0.6
Oct.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

<u>Month</u>	<u>Year</u>	<u>Kepone</u>	<u>op DDD</u>	<u>op DDE</u>	<u>op DDT</u>	<u>pp DDD</u>	<u>pp DDE</u>	<u>pp DDT</u>
Nov.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dec.	1979	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Jan.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Feb.	1980	N.D.	N.D.	N.D.	N.D.	0.4.	N.D.	N.D.
Mar.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Apr.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
May	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
June	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
July	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Aug.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Sept	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Oct.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Nov.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dec.	1980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Jan.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Feb.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Mar.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Apr.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
May	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
June	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
July	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Aug.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Sept	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Oct.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Nov.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dec.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Jan.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Feb.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Mar.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Apr.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
May	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
June	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
July	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Aug.	1981	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Sept	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Oct.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Nov.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Dec.	1982	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

ATTACHMENT D

LINDANE AREA

Attached is data collected in 1976 and 1977 from outfall 101, Naaman's Creek and sediment in the South Works sluiceway (exact location unspecified).

ALLIED CHEMICAL CORPORATION
BAKER AND ADAMSON WORKS

BHC ANALYSES

River Water Influent and Storm Water Discharge (Outfall 101)

<u>Sample</u>		<u>Concentrations (Parts per billion)</u>	
		<u>Lindane</u>	<u>Other EHC's</u>
7/26/77	River Water	N.A.	N.A.
7/26/77	Discharge	0.3	N.A.
8/22/77	River Water	N.A.	N.A.
8/22/77	Discharge	0.1	0.5
8/23/77	River Water	N.A.	N.A.
8/23/77	Discharge	0.1	0.2
9/7/77	River Water	$\frac{1}{2}$ 0.1	0.4
9/7/77	Discharge	$\frac{1}{2}$ 0.1	0.7
9/15/77	River Water	$\frac{1}{2}$ 0.1	0.7
9/15/77	Discharge	$\frac{1}{2}$ 0.1	0.7
10/5/77	River Water	$\frac{1}{2}$ 0.1	$\frac{1}{2}$ 0.1
10/5/77	Discharge	$\frac{1}{2}$ 0.1	0.5
10/13/77	River Water	$\frac{1}{2}$ 0.1	$\frac{1}{2}$ 0.1
10/13/77	Discharge	$\frac{1}{2}$ 0.1	0.2
11/2/77	River Water	$\frac{1}{2}$ 0.1	0.2
11/2/77	Discharge	0.1	0.6
11/9/77	River Water	0.1	0.3
11/9/77	Discharge	0.4	1.1
12/1/77	River Water	$\frac{1}{2}$ 0.1	$\frac{1}{2}$ 0.1
12/1/77	Discharge	$\frac{1}{2}$ 0.1	0.4
12/5/77	River Water	$\frac{1}{2}$ 0.1	$\frac{1}{2}$ 0.1
12/5/77	Discharge	0.2	0.5

N.A. - NOT ANALYZED DUE TO LACK OF SAMPLE

ALLIED CHEMICAL CORPORATION
BAKER AND ADAMSON WORKS

BENZENEHEXACHLORIDE (BHC) ANALYSES

Results in parts per billion (ppb)

Naaman's Creek Samples 10/18/77

	No. 1 <u>Upstream</u>	No. 2 <u>Upstream</u>	No. 3 <u>Downstream</u>	No. 4 <u>Downstream</u>
Lindane	½ 0.1	0.5	½ 0.1	0.6
Other BHC's	½ 0.1---	1.0	1.3	1.7

DELAWARE WORKS SOUTH

<u>SAMPLES</u>		<u>BHC'S</u>
#28	- Sed. Samp. 11/11/76, 10 a.m., 64°, 23 m.g.d. Samp. pt. #1, 0-6" comp.	1 PPM
#33	- Sed. Samp. 11/11/76, 10 a.m., 64°, 23 m.g.d. Samp. pt. #1, 6-12" comp.	0.3 PPM
#27	- Sed. samp. 11/11/76, 10:30 a.m., 64°, 23 m.g.d., Samp. pt. #2, 0-6" comp.	N.D.
#29	- Sed. Samp. 11/11/76, 10:30 a.m., 64°, 23 m.g.d. Samp. pt. #2, 6-12" comp.	0.3 PPM
#31	- Sed. Samp. 11/10/76, 3 p.m., 64°, 23 m.g.d. Samp. pt. #3, 0-6" comp.	0.5 PPM
#26	- Sed. Samp. 11/10/76, 3 p.m., 64°, 23 m.g.d. Samp. pt. #3, 6-12" comp.	0.3 PPM
#32	- Sed. Samp. 11/10/76, 3:15 p.m., 64°, 23 m.g.d. Samp. pt. #4, 0-6" comp.	N.D.
#30	- Sed. Samp. 11/10/76, 3:15 p.m., 64°, 23 m.g.d. Samp. pt. #4, 6-12" comp.	1.0 PPM



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
1875 New Hope Street
Norristown, Pennsylvania 19401
215-270-1920

December 18, 1985

F. A. Schiffhauer, Plant Manager
Allied Corporation
Delaware Valley Works - North
6300 Philadelphia Pike
Marcus Hook, Pennsylvania 19061

PAD990823742

Dear Mr. Schiffhauer:

We have completed our review on the hazardous waste closure plan submitted on September 11, 1985 which was part of your request to withdraw your hazardous waste Part B application involving the storage of hazardous waste in containers at your facility located in the Borough of Marcus Hook, Delaware County.

This closure plan has been reviewed and has been found to be acceptable. Therefore, I am returning the hazardous waste Part B application to you which means your interim status as a hazardous waste container storage facility is now terminated.

This means you can only function as a hazardous waste generator from this time onward, which means you may only store hazardous waste in containers at your facility for a period of less than 90 days. Once we have inspected your facility to see that the closure has been properly implemented, you will be considered officially closed as a hazardous waste treatment, storage or disposal facility.

If you have any other questions concerning this, you may contact Mr. Larry Lunsik, Regional Solid Waste Facilities Supervisor at 270-1920.

Very truly yours,

Wayne L. Lynn

WAYNE L. LYNN
Regional Solid Waste Manager

cc: Marcus Hook Borough
Delaware Co. Planning Dept.
Mr. Holmes
SW351.1

bc: F. A. Schiffhauer
E. B. Van Orman
A. V. Spivey
E. J. Shields
L. A. Mattioli
H. G. Albrecht
R. C. Muller
V. A. June
F. H. Hayward
J. A. Leese
F. Cooper
E. J. Grezlikowski



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

Bethlehem Office
520 East Broad Street
Bethlehem, PA 18018
861-2070

January 7, 1986

Re: Closure Plan for Hazardous
Waste Management Facility
PAD990823742

Mr. F.A. Shiffhauer, Plant Manager
Allied Chemical
Delaware Valley Works - North
Marcus Hook, PA 19061

Dear Mr. Shiffhauer:

The referenced closure plan has been reviewed by our technical staff and found to be acceptable. During the review process the Borough of Marcus Hook responded with the following:

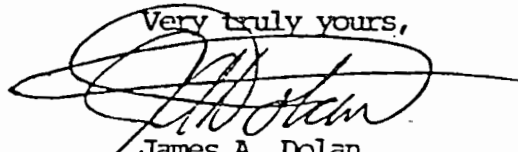
"... that Allied Chemical is not to transport their hazardous waste through downtown Marcus Hook in order to get to I-95 and the Commodore Barry Bridge to Bridgeport, New Jersey. The route they suggest taking is South on Post Road (Rt. 13) to Delaware Route 92 to the Claymont, Delaware interchange of I-95."

An inspection by our field representative on December 31, 1985, confirmed that you are a generator only storing less than 90 days.

Upon completion of actual closure activities, please execute the attached certification and forward them along with the results of any analyses done, to this office.

This completes the Department's requirements for this closure plan. If you have any questions or if I can be of further service, please do not hesitate to call.

Very truly yours,



James A. Dolan
Solid Waste Specialist

JAD/bal

CC: L. Lunsik
Field Supervisor
Division of Facilities Management
U.S. EPA Code 3HW33

Date of inspection 12-31-85 Time start 10:00 Time finish 12:35
Name of inspector Carol Kurtz
Company, installation name Allied Corp.
Location Delaware Valley Works Rt 13
County Delaware Municipality Marcus Hook
Identification number PAD 990823742
Name of responsible official F.A. Schiffhauer
Title Plant Man.
Mailing address Rt. 13 Marcus Hook PA 19061
Area code and phone no. 302 - 792 - 8500 215 - 485 - 1857
Name of person interviewed David Murphy / Herb Albrecht
Title Man - Environmental Services
Mailing address (if different from above) same
Area code and phone no. "

1. Site characterization:

- a. ☐ Treatment - ☐ surface impoundments, ☐ chemical, ☐ physical, ☐ biological
b. ☒ Storage - ☒ containers, ☐ tanks, ☐ surface impoundments, ☐ waste piles
c. ☐ Disposal - ☐ land treatment, ☐ landfill, ☐ incineration, ☐ thermal treatment
d. ☐ Use, ☐ reuse, ☐ recycle, ☐ reclaim

2. Does the facility generate hazardous wastes? ☒ Yes ☐ No

3. Types of hazardous waste produced by Hazardous Waste Number:

D001 - 3
F002 - 5

4. Are hazardous wastes transported off-site by the facility? ☐ Yes ☒ No

Date of Inspection 12-31-85 Identification Number PAD 9908237
Company, Installation Name Allied Corp.
City Delaware Municipality Marcus Hook

Closure Inspection -
Storage facility is closed with
the exception of 4 drums contain-
ing organic stripper. These will
be shipped to a disposal facility
within a month. Copy of
manifest (shipment) will be forwa-
rded when shipment is made.

This inspection report is official notification that a representative of the Department of
Environmental Resources, Bureau of Solid Waste Management, inspected the above installation.
The findings of this inspection are shown in this report. Any violations which were uncovered
during the inspection are indicated. Violations may also be discovered upon examination of
the results of laboratory analyses and review of Department records. Notification will be
forthcoming, confirming any violations indicated herein and listing any additional violations.

Person Interviewed (signature) Robert L. Albrecht Date 12/31/85
Inspector (signature) James H. Hartz Date 12-31-85

Date of Inspection 12-31-85 Identification Number PAD990823
Company, Installation Name Allied Corp.
City Belmore Municipality Marcus Hook

Facility is in compliance.
The RRC has been submitted
to the Department and will
be reviewed.

This inspection report is official notification that a representative of the Department of Environmental Resources, Bureau of Solid Waste Management, inspected the above installation. The findings of this inspection are shown in this report. Any violations which were uncovered during the inspection are indicated. Violations may also be discovered upon examination of the results of laboratory analyses and review of Department records. Notification will be forthcoming, confirming any violations indicated herein and listing any additional violations.

On Interviewed (signature) _____

Date _____

Inspector (signature) Carol Kuntz

Date 12-31-85

1 - NON-COMPLIANCE, 2 - COMPLIANCE, 3 - NOT APPLICABLE, 4 - NOT DETERMINED

COMPLIANCE STATUS				REQUIREMENT	CHAPTER CITATION
1	2	3	4		
	X			Identification number	(c) 1
	X			Hazardous waste shipments offered only to licensed transporters	(c) 4
	X			Authorization received from TSD facility for wastes shipped off-site	(d)
	X			PA manifest used for intrastate shipments	(e) 1
	X			Disposer state manifest or EPA format manifest used for out-of-state shipments	(e) 1
	X			Manifests filled out properly and completely	(e) 1
	X			Manifests routed properly and within time limits (24 hours)	(e) 2
	X			Proper U.S. DOT shipping containers or packages	(f) 1
	X			Shipping containers marked and labeled according to U.S. DOT	(f) 1
	X			Containers of 110 gal. or less marked with required PA label	(f) 1
	X			Placards offered to transporter	(f) 2
	X			Wastes accumulated on-site for less than 90 days	(g) 1
	X			Wastes stored in proper containers and properly marked and labeled	(g) 1
	X			Containers managed in accordance with 75.265(g)	(g) 1
	X			Containers clearly marked with accumulation date and visible for inspection	(g) 1
	X			Records retained at designated location for 20 years	(h)
	X			Quarterly reports submitted to the Department	(i)
	X			Exception reporting procedures followed	(j)
	X			Hazardous waste disposal plan, if required	(l)
	X			Spill reporting procedures followed	(m) 1
		X		Preparedness, Prevention and Contingency Plan approved and implemented	(m) 5
		X		Special requirements followed for international shipments	(o)
	X			Personnel training program 265	(f)
	X			Personnel training program annual review 265	(f) 1
	X			Drums labeled during storage to accurately identify contents Act 97 Section 403	(b)
	X			Facility operated to minimize the possibility of fire, explosion, or discharge of HW to air, soil, surface water, or ground water	26 (b)

Section I

Closure Plan, Post-Closure Plan, and Financial Requirements

This section is submitted in accordance with the requirements of Sections (264) (o) and (p).

The closure plan identifies all steps that will be necessary to completely close the facility at the end of its intended operating life.

A post-closure plan is not required because this is not a disposal facility and all wastes will be removed at closure.

Delaware Valley Works will maintain an on-site copy of the approved closure plan and all revisions to the plan until the certification of closure completeness has been submitted and accepted by the PaDER. Delaware Valley Works will notify PaDER at least 180 days prior to the date we expect to begin final closure. There are no current plans for closure in the foreseeable future.

Upon completion of closure, Delaware Valley Works will submit to PaDER a certification by both an Allied and a local independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

I-1 Closure Plan

Closure of the container storage facility is not currently planned. However, should future circumstances or decisions dictate that we discontinue use of this facility, the system and procedures which follow will be employed. Any modifications to the existing facility equipment, structures or procedures related to the management of the facility will be reflected in our updating and revising of the closure plan.

This closure plan has been designed to ensure that the facility will not require further maintenance and controls, minimizes or eliminates threats to human health and the environment, and avoids escape of hazardous waste, hazardous waste constituents, contaminated rainfall, or waste decomposition products to ground, surface water, or the atmosphere.

Allied Corporation
Chemical Sector
Industrial Chemicals Division

Closure Plan Outline for Container Storage Facility

EPA Facility I. D. Number: PAD 990823742
Location: Delaware Valley Works
Address and Telephone No.: Route 13
Marcus Hook, PA 19061
(302) 798-0621

General Facility Information

One area of Delaware Valley Works is dedicated to the storage of hazardous waste in containers, an area located in the north east section of the plant property (Location A on Figure I-1).

The facility is of permanent design with curbing. The dimensions are approximately 50' X 98' (4900 sq. ft.) and the design capacity of the facility is 400 X 55 gal. drums, equivalent to 22,000 gallons total. The waste types which will be stored at the facility include:

<u>EPA Hazard Waste No.</u>	<u>Description</u>	<u>Physical State</u>
D002	B-Naphthalene Sulfonic Acid Filter Muds	Liquid, solid
F001	Waste Solvents	Liquid
F002	Waste Solvents	Liquid
F003	Waste Solvents	Liquid
D001	Flammable Waste, N.O.S.	Liquid, solid
F005, U056, U213	Waste Solvents	Liquid
U003, U004		
D002	Waste Organic Stripper	Liquid, solid
D001	Ammonium Chloride with Hexane	Solid

Schedule of Final Closure (Milestone Chart)

- A. Estimated year of closure: 2031*
- B. Final date waste will be added to storage area: June 15, 2031
- C. Date all preprocessing completed: July 15, 2031
- D. Date that all inventory has been removed for off-site disposal: September 15, 2031
- E. Final date facility decontaminated: November 15, 2031
- F. Final date closure completed: December 15, 2031
- G. Total time to close the facility (Justification if closure is longer than six months): six months

* Date of closure is unknown. Dates shown are hypothetical to illustrate administrative requirements.

Phase I - Removal of Inventory

Removal of the containerized hazardous wastes, including pallets, will be accomplished by the established procedure of off-site disposal. The containerized wastes will be labeled and manifested according to DOT and RCRA requirements. Transportation and disposal will be through contractual agreements with EPA approved facilities. All recordkeeping requirements will be met.

Phase II - Decontamination of Facility

Decontamination of the waste storage facility will consist of:

1. Clean-out of collection sump. Maximum volume of liquid is 376 gallons. Water will be tested for pH and flammability. Non-flammable liquid in the pH range of 6.0 to 9.0 will be discharged to the on-site non-hazardous treatment facility. Non-flammable liquid not in the 6.0 to 9.0 pH range will be neutralized to that range prior to discharge to the treatment facility. Flammable liquid will be containerized and disposed off-site.
2. Water wash down of floor areas. The wash water will be collected and checked for pH. Water in the 6.0 to 9.0 pH range will be discharged to the on-site treatment facility. Water not in the 6.0 to 9.0 pH range will be neutralized before discharge to the treatment facility.

Phase III - Decontamination of Surrounding Area

Contamination by wastes of surrounding soil is not considered a likely possibility.

Phase IV - Closure Certification

All signs will be removed as an element of the general facility closure. Inspection logs will be closed as required. Closure certification will be provided by a staff registered professional engineer and an independent registered professional engineer. Due to the simplicity of this storage facility, one inspection by the certifying engineers should be sufficient. The certification will be submitted to PaDER.

Administrative Schedule of Final Closure

Facility: Delaware Valley Works

Expected Year of Closure: 2031*

December 15, 2030

Submit final closure plan to PaDER (180 days prior to receiving last volume of waste.)

June 15, 2031

No wastes accepted after this date. (Actual last "drum" of waste may have been placed in facility weeks or months prior -- specific to waste generation frequency at plant.)

July 15, 2031

Closure should begin by this date (30 days after last waste received.)

September 15, 2031

All waste must be removed from the site (90 days after last waste received.)

December 15, 2031

Closure must be completed (180 days after last waste received or plan approval, whichever is later.) Included are decontamination of equipment, the facility structures, and owner and independent engineer approval certification of "plan" completion. Certification submitted to PaDER.

*Date of closure is unknown. Dates shown are hypothetical.

I-2 Post-Closure Plan

Post-closure care will not be needed for this facility because it is not a disposal facility.

I-3 Notice in Deed and Notice to Local Land Authority

Because the site is only a hazardous waste storage facility and not a disposal facility, notation is not necessary in the deed informing potential purchasers of restrictions associated with a disposal site.

I-4 Closure Cost Estimates

Container Storage Area

Phase I Removing Inventory

Off-site disposal estimate -

1. Disposal cost (400 drums @ \$50/drum)	\$ 20,000
2. Plant labor (32 hours @ \$18.10/hr.)	579
3. Transportation (5 trips @ \$2000/trip)	<u>10,000</u>
Subtotal	<u>\$ 30,579</u>

Phase II Clean-out of Collection Sump

1. Disposal cost (8 drums @ \$50/drum)	\$ 400
2. Plant labor (8 hours @ \$18.10/hr.)	145
3. Transportation (8 drums @ \$25/drum)	<u>200</u>
Subtotal	<u>\$ 745</u>

Phase III Decontamination of Facility

1. Wash down floor areas - plant labor (8 hrs. @ \$18.20/hr.)	\$ 145
Subtotal	<u>\$ 145</u>

Phase IV Closure Certification

1. Estimated cost for registered professional engineer (8 hrs. @ \$100/hr., includes expenses and transportation.)	\$ 800
Subtotal	<u>\$ 800</u>
Estimate of closure cost for Delaware Valley Works Facility	<u>\$ 32,269</u>

I-5 Financial Test and Corporate Guarantee for Closure

Allied Corporation has established the Financial Test and Corporate Guarantee for closure. Attachment I-1 is a copy of the significant sections of Allied Corporation's demonstration of financial responsibility to USEPA Region III and PaDER. The attachment includes a letter from Allied's Chief Financial Officer, an auditor's report confirming the results of the financial test, and the auditor's opinion regarding the financial test.

I-6 Post-Closure Cost Estimate

Since all wastes will be disposed off-site, there will be no post closure activities or costs.

I-7 Financial Assurance Mechanism for Post-Closure

Since all wastes will be disposed off-site, there will be no post closure activities or costs.

I-8 Liability Insurance

I-8a Sudden Insurance

Allied Corporation has obtained liability insurance for sudden and accidental occurrences in the amount of \$1 million per occurrence with an annual aggregate of \$2 million. (See Attachment I-2)

I-8b Non-Sudden Insurance

Because the hazardous waste management facility is used only for storage, no liability insurance is required for non-sudden occurrences.

I-8c Financial Test

Allied Corporation has an insurance policy for sudden and accidental occurrences; therefore, the financial test is not necessary.

I-8d Variance Procedure

Delaware Valley Works does not now request a reduction of liability amounts.

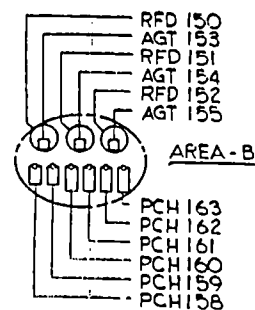
I-8e Adjustment Procedures

If the amounts of liability coverage are increased and/or the non-sudden liability coverage requirements are improved by either USEPA or PaDER, Allied Corporation will comply as prescribed by the regulations.

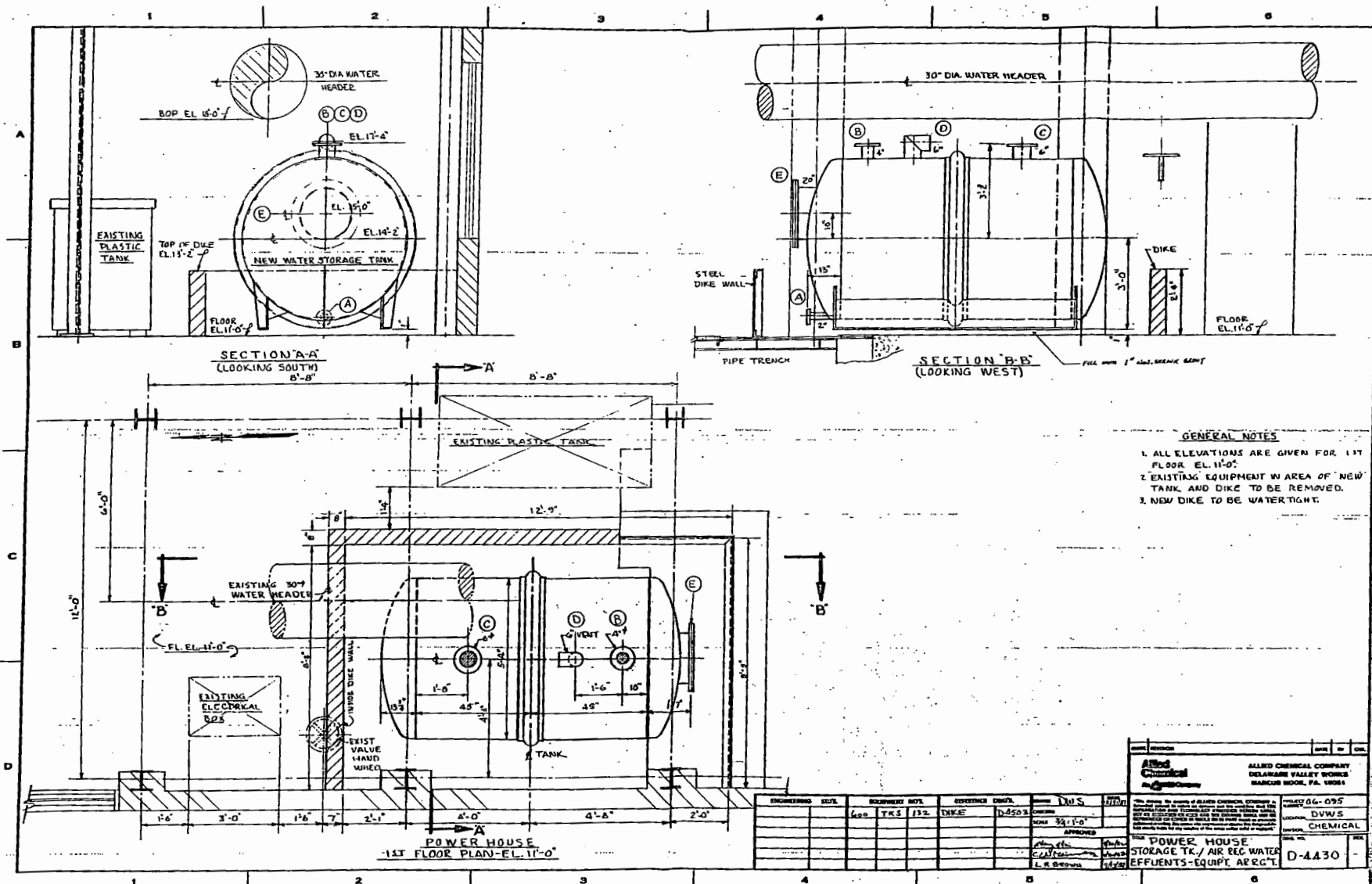
I-9 State Assumption of Responsibility

Delaware Valley Works will not request State assumption of legal or financial responsibilities.

~~NORTH~~



[illegible]



ENGINEERING	DATE	REVISION	NO.	DATE	BY	CHKD.	APP'D.
1	10-1-78	1	1	10-1-78	1	1	1
2							
3							
4							
5							
6							
7							
8							
9							
10							

Alred Chemical DELAWARE VALLEY WORKS MARCUS WOOD, PA. 19361		PROJECT NO. 095 LOCATION: DVWS DRAWING NO. D-4430
THIS DRAWING IS THE PROPERTY OF ALRED CHEMICAL COMPANY. IT IS TO BE USED ONLY FOR THE PROJECT AND LOCATION SPECIFIED HEREON. IT IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF ALRED CHEMICAL COMPANY.		DATE: 10-1-78 DRAWN BY: L. R. BROWN CHECKED BY: L. R. BROWN

